



TITLE:

1. Electrical Properties of GaAs and InP MOS Diodes and Characterization by Auger Electron Spectroscopy

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ないことから、束縛励起子は面状欠陥近傍に存在することでより高密度になっていると考えられた。以上のことから線状吸収は2次元的励起子によるものと結論した。また発光スペクトルは励起強度を上げると吸収と同じようにスペクトル形状が広がり位置が高エネルギー側にシフトするが、3次元的な励起子とは異なり励起子分子発光線や、その他高密度励起子系からの発光線は観測されなかった。

以上の様に本研究は層状結晶の示す特徴ある励起子の存在とその強光励起下の効果について報告したものである。

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1. Electrical Properties of GaAs and InP MOS Diodes and
Characterization by Auger Electron Spectroscopy

土 屋 勝

The interface properties of Al₂O₃ thin film deposited on GaAs and InP wafers by electron-

beam evaporation are studied using both AES and electrical measurements. The C-V curves of MOS diode made by using GaAs single crystal have the typical characteristics. Its depth profile shows the uniformity of insulator and of insulator-semiconductor interface. The sample made from InP crystal has the C-V curves independent on the gate bias and phosphorus is rich in interface.

In addition, SiO film deposited on InP wafer by vacuum evaporation is also studied. This sample has good electrical properties and indicates both the small deviation from stoichiometry of InP and the pile-up of carbon at the interface.

2. The Piezoelectric Effect on Al-SiO-n-InP MOS Diode and Electrical properties of SiO Film

荒井真介

The theory of change in capacitance caused by piezo-electric effect is extended to apply well in high frequency measurements. The theory extended is confirmed by using the Al-SiO-n-InP MOS diode in which the thin insulating SiO film is obtained from the vacuum evaporation of SiO chunks.

The surface state density is determined to be $8.5 \times 10^{11} \text{ eV}^{-1} \cdot \text{cm}^{-2}$ by comparing the theoretical result with the experimental one. The dependence of electrical properties of the SiO film on the deposition condition is examined by the Al-SiO-Al MIM diode fabricated in ultra high vacuum system. The good insulating SiO film is obtained from the deposition rate of 1.4Å/sec at the oxygen pressure of 5×10^{-5} Torr. The capacitance of film varies only by 10% in the frequency range from 30Hz to 1MHz and its resistivity is $10^{13} \Omega\text{-cm}$ at the field strength of 10^6 V/cm . The compatibility of this deposition condition to make MIM diode with that to obtain the good InP MOS diode is also discussed.

SrS : Pb²⁺ 蛍光体の発光中心

大平孝明

SrS : Pb²⁺ 粉末蛍光体の発光スペクトルと励起スペクトルを 80 K, 6 K, 4 K の各温度で測定した。発光スペクトルには, Pb²⁺ イオン内の $^3T_{1u} \rightarrow ^1A_{1g}$ 遷移による発光帯の他に